

This course discusses advanced methods in financial derivatives valuation.

Lesson 1 Asset pricing Basics, Continuous Time Models

Lesson 2 The Black-Scholes World

Lesson 3 Introduction to Monte Carlo and Binomial Models, Stochastic Processes and Stochastic Differential Equations

Lesson 4 Foreign Exchange, Forward, Futures, Exchanges Options

Lesson 5 Exotic Options

Lesson 6 More on Monte Carlo and Binomial Evaluation

Lesson 7 Finite Difference Methods, The General Valuation Equation, Numerical integration Methods

Lesson 8 Tree Representation, The Propagation of Errors, Error Control, Green's Theorem, American Problems

References: I will follow mostly books by Back and Iacus. Most of the material that I will distribute is based on papers I published. I am greatly in debt to my coauthors and the people on whose work we founded ours.

Back 'A Course in Derivative Securities' Ch.1-10.

Iacus 'Simulation and Inference for Stochastic Differential equations' Ch. 2.

Geske R., K. Shastri 'Valuation by Approximation' JFQA March 1985, pp. 45-72.

Barone-Adesi G., N. Fusari and J. Theal "Barrier Option Pricing Using Adjusted transition Probabilities", Journal of Derivatives, Vol.16, Winter 2008, pp 36-53.

Barone-Adesi G, K. Giannopoulos and Bourgoin, F. 'Don't Look Back', Risk, August 1998.

Barone-Adesi G, K. Giannopoulos and L. Vosper 'VaR without Correlations for Portfolios of Derivative Securities', Journal of Futures Markets, August 1999.

Barone-Adesi G, K. Giannopoulos and L. Vosper 'Backtesting Derivative Portfolios with Filtered Historical Simulation (FHS)', European Financial Management, March 2002, pp. 31-58.

Barone-Adesi G., Elliott R. (2007) 'Cutting the Hedge', Computational Economics, Vo.29, N.2, pp. 151-158.

Barone-Adesi G., R. Engle and L. Mancini "A GARCH Option Pricing Model with Filtered Historical Simulation", Review of Financial Studies, 21, May 2008, pp.1223-1258.

Barone-Adesi G., and G. Sorwar "Valuation of Two Factor Interest rate models Using Green's Theorem", Applied Mathematical Finance, Vol. 18, September 2011, pp.277-289.